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			EXAMINER
			KALINCHAK, S
			ART UNIT
			PAPER NUMBER
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SCULLY, SCOTT, MURPHY & PRESSER
400 GARDEN CITY PLAZA
GARDEN CITY, NY 11530

This is a communication from the examiner in charge of your application.
COMMISSIONER OF PATENTS AND TRADEMARKS

- ☒ This application has been examined ☒ Responsive to communication filed on 10/15/91 ☐ This action is made final.

A shortened statutory period for response to this action is set to expire 3 month(s), _____ days from the date of this letter.
Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

- | | |
|---|---|
| 1. <input checked="" type="checkbox"/> Notice of References Cited by Examiner, PTO-892. | 2. <input type="checkbox"/> Notice re Patent Drawing, PTO-948. |
| 3. <input type="checkbox"/> Notice of Art Cited by Applicant, PTO-1449. | 4. <input type="checkbox"/> Notice of Informal Patent Application, Form PTO-152 |
| 5. <input type="checkbox"/> Information on How to Effect Drawing Changes, PTO-1474. | 6. <input type="checkbox"/> _____ |

Part II SUMMARY OF ACTION

1. ☒ Claims 1-44 are pending in the application.
Of the above, claims 1-13, 37-44 are withdrawn from consideration.
2. ☐ Claims _____ have been cancelled.
3. ☐ Claims _____ are allowed.
4. ☒ Claims 14-36 are rejected.
5. ☐ Claims _____ are objected to.
6. ☐ Claims _____ are subject to restriction or election requirement.
7. ☒ This application has been filed with informal drawings under 37 C.F.R. 1.85 which are acceptable for examination purposes.
8. ☐ Formal drawings are required in response to this Office action.
9. ☐ The corrected or substitute drawings have been received on _____. Under 37 C.F.R. 1.84 these drawings are ☐ acceptable; ☐ not acceptable (see explanation or Notice re Patent Drawing, PTO-948).
10. ☐ The proposed additional or substitute sheet(s) of drawings, filed on _____, has (have) been ☐ approved by the examiner; ☐ disapproved by the examiner (see explanation).
11. ☐ The proposed drawing correction, filed _____, has been ☐ approved; ☐ disapproved (see explanation).
12. ☐ Acknowledgement is made of the claim for priority under U.S.C. 119. The certified copy has ☐ been received ☐ not been received ☐ been filed in parent application, serial no. _____; filed on _____.
13. ☐ Since this application appears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.
14. ☐ Other

EXAMINER'S ACTION

Applicants' election with traverse of Group II, claims 14-36 in Paper No. 7 is acknowledged. The traversal is on the grounds that the restriction requirement contains no showing that the inventions are independent, the inventions are not distinct, and the instant restriction contravenes the Constitutional purpose of the U.S. Patent system. This is not found persuasive for the following reasons.

Regarding the first assertion that the restriction requirement does not allege that the inventions are independent, it is noted that while 35 U.S.C. 121 and 37 C.F.R. 1.141 when read literally may appear to require a showing that the inventions are both independent and distinct, MPEP 802.01 contains a full explanation as to why the construction of "independent and distinct" allows restriction when it is only shown that the inventions are distinct. Thus, it is clear that independence need not be shown in a restriction requirement where the inventions are distinct due to the legislative history and intent of the statute, and the long established substantive law that dependent or related inventions are properly restricted when they are distinct.

It is also asserted that the inventions of Group I and II are not distinct because the claimed process is used to produce the claimed product. However, this fact relates to whether the inventions are independent, not distinct. See MPEP 802.01. The fact that the product as claimed can be made by a materially different process is sufficient to show that the inventions are distinct. See MPEP 806.05(f). To the extent that Applicants traverse the Examiner's assertion that the instant product can be made by a materially different process such as flame combustion, the Howard et al. article and the Gerhardt et al. article are cited in support thereof. Applicants refer to the indication of the restriction requirement that each group is classified differently. This fact is not relied upon to show that the inventions are distinct (distinctness has been shown pursuant to MPEP 806.05(f)), but to establish reasons for insisting on the restriction of the distinct inventions. In this case, each invention has a different classification which shows that each invention has attained a separate status in the art and that a different search is required for each group of claims. For example, examination of Group I drawn to processes of evaporating graphite and extracting C60/C70, requires a search in 423/658.5; 423/460; and 427/122. No pertinent art to the claimed carbon product would be expected to exist in these areas.

As to Applicants' last assertion, it is noted that should

the claims of Group I be refiled in a divisional application a holding of double patenting between the process and product would be improper. Applicants have not shown that the instant claims represent one invention, and thus restriction is proper to insure orderliness and efficiency in the U.S. Patent system.

The requirement is still deemed to be proper and is therefore made FINAL.

The disclosure is objected to because of the following informalities: At pg. 3, line 1 the word "BRIEF" should be inserted before "DESCRIPTION". At pg. 3, line 2 "MIcrograph" should be changed to "Micrograph". At pg. 13, line 30 "contains" is misspelled. Appropriate correction is required.

Claims 15, 17-22, 26,29 and 32 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A) Claims 15, and 18-22 are indefinite as they depend from non-elected claims.

B) In claim 17, line 3 the term "intense" is indefinite as it is not clear what magnitudes of peaks Applicants consider intense. Also on line 6 of claim 17 the word "sublimes" is misspelled.

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C) Claims 26 and 32 are indefinite as it is not clear what levels of purity Applicants consider "pure" or "substantially pure".

D) In claim 29, line 2 the term "broad" is indefinite as it is not clear what sizes of peaks Applicants consider broad.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. § 103 which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

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This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. § 103, the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 C.F.R. § 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of potential 35 U.S.C. § 102(f) or (g) prior art under 35 U.S.C. § 103.

The art applied is taken as being indicative of the level of skill of one of ordinary skill in the art.

Claims 14,16,17 and 23-36 are rejected under 35 U.S.C. § 102(b) as being anticipated by the Kroto et al. article in Nature, Vol. 318, 162, November 14, 1985 with the Curl et al. article in Scientific American, October 1991 pg. 54. cited to show an inherent state of fact.

As discussed in the Nature article, Kroto et al. detected C₆₀ and C₇₀ fullerenes in soot produced by the laser evaporation of graphite. The C₆₀ and C₇₀ were detected by means of time of flight mass spectrometry, and the amount of C₆₀ and C₇₀ molecules produced was on the order of tens of thousands (see the Curl et al. article in Scientific American, October 1991, pg. 54, third column). The Examiner notes that the detection method used by Kroto et al. detected the C₆₀ and C₇₀ in the vapor state, thereby anticipating the instant claims 33-36.

Also, the instant claims 16,17,23,26,27,29,30 and 32 are directly anticipated by the teaching of Kroto et al.. Note that immediately after the graphite is vaporized, the helium

atmosphere in the apparatus of Kroto et al. contains a carbon product that comprises a mixture of C_{60} and C_{70} . Regarding the instant claims that define the properties of C_{60} and C_{70} fullerenes such as the mass spectra, infrared spectra, UV spectra, solubilities, sublimation temperatures and color, the Examiner notes that these are all inherent properties of the C_{60} and C_{70} molecules produced and detected by Kroto et al. which have subsequently been confirmed in the art. It is also noted that the C_{60} and C_{70} of Kroto et al. is "formed" as the graphite is vaporized, thereby anticipating the instant claims 26 and 30. Regarding the instant limitations in claims 26 and 32 that the fullerenes be "substantially pure", as shown in Fig. 3 of the reference detection peaks for C_{60} and C_{70} are fully separated from other peaks thus indicating that the instrument has isolated the C_{60} and C_{70} from other substances in the matrix thus indicating that the two are "pure" or "substantially pure".

The instant claims 14,25,28 and 31 require that the C_{60} or C_{70} be incorporated into a solid matrix. The disclosure of Kroto et al. inherently meets this requirement as solid particulate of free flowing soot is formed in the evaporation chamber. Given the well known stability of the fullerenes produced it is inherent that the fullerenes not directed to the mass spectrometer are inherently incorporated into the soot mixture, which is either amorphous or crystalline. Thus the instant

claims are anticipated in this respect. Also, the limitation that the product be extended in at least one direction is noted. This is not seen to distinguish the instant product because the limitation reads on any particle that has a definite size.

Claims 15 and 17-24 are rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103 as obvious over the Kroto et al. article in Nature, Vol. 318, 162, November 14, 1985 with the Curl et al. article in Scientific American, October 1991, pg. 54. cited to show an inherent state of fact.

For the reasons set forth in the above 35 USC 102(b) rejection the C₆₀ and C₇₀ products of Kroto et al. are identical or only slightly different than that claimed. Thus the instant product by process claims are rendered prima facie obvious by the teaching of Kroto et al. See MPEP 706.03(e).

Claims 14-25, 27-31 and 33-36 are rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103 as obvious over the carbon produced in partial flame combustion processes such as those described in the Kirk-Othmer text in view of the Gerhardt et al. article, the Howard et al. article and the Curl et al. article in Scientific American, October 1991, pg. 63.

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The Kirk-Othmer text describes two well known methods of producing carbon black and/or soot ---- an acetylene black process and a channel black process. Both methods comprise the steps of collecting the carbon product produced by sooting flames (pgs. 652-653). The Gerhardt et al. article, the Howard et al. article, and the Curl et al. article in Scientific American October 1991 (pg. 63) are cited as evidence that C_{60} and C_{70} fullerenes are inherently produced in the carbon black processes described by the Kirk-Othmer text. The specific limitations of the instant claims are met by the fullerenes produced in carbon black process for the process set forth in the above ~~are~~ art rejections.

The prior art cited is cited as art of interest.

Any inquiry concerning this communication should be directed to Stephen Kalinchak at telephone number (703) 308-1093.

SG-K
S. Kalinchak:aw
November 12, 1991


Michael Lewis
Supervisory Patent Examiner
Patent Examining Group 110